



**Low  
Carbon  
Heatons**

**Energy  
Event**

**Thursday  
13 October  
2022**

# Understanding Net Zero and Carbon Footprints

Liz Atherton  
Climate Action Now, Stockport Council



# Climate Action Now (CAN)

- Tackling climate change is a key priority for the council, both for Councillors as well as council senior leadership
- Everyone, including the council, council staff, residents, schools, communities and businesses, must make big changes to reduce our emissions now so that we stop contributing to climate change
- We have 2 key targets:
  - for Stockport to be carbon neutral by **2038**
  - for Stockport Council to be net zero by **2030**
- The Council's work to achieve these goals spans 6 key workstreams:



**Council CAN**



**Low Carbon  
Buildings**



**Sustainable  
Transport**



**Climate Friendly  
Borough**



**Renewable  
Energy**



**Natural  
Environment**

## Climate Action Now

**Nick Leslie**, Head of CAN

**Liz Atherton & Ellie Healicon**,  
CAN Team Members

Plus other colleagues across the council including planning policy, estates, and neighbourhoods teams

# CAN highlights

- **Monitoring our operational GHG emissions**
  - Monitoring in place and being further developed
- **Decarbonising the civic estate**
  - Stopford House renovations are part funded by a Public Sector Decarbonisation Scheme (PSDS) which will result in the energy used by the building being reduced.
  - Solar panels on Endeavour House and Grand Central
  - Replacing streetlighting with LED
- **Mapping out a decarbonisation pipeline**
  - Utilising the Stockport Local Area Energy Plan to map out the decarbonisation pathway for 2038 target
  - Developing renewable energy generation projects across the council's civic estate - e.g. feasibility studies being carried out for large-scale district heat networks and solar PV installations





- **Tree planting across Stockport**

- Initial target of planting 11,500 trees by 2030 has been achieved. Currently close to 15,000 trees have been planted and work continues.

- **Electric vehicle charge points**

- In talks about expanding the amount of public charging points in borough

- **Electrification of the bus fleet**

- **Stockport CAN Fund has supported community action**

- **CAN engagement**

- Schools Climate Assembly (running again 22/23), Eco-friendly Period Products support for schools & colleges
- Carbon Literacy for officers & Members, and facilitating CL courses for businesses, communities and education leaders courses too!
- Set up a Climate Action Business Forum
- Set up the Stockport Green Network with Sector3

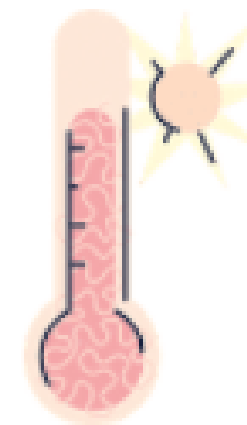


# What is a Carbon Footprint?



A carbon footprint measures "the total amount of greenhouse gases released into the atmosphere as a result of our daily actions"

**In other words...a carbon footprint helps us to understand how much impact the things that we do have on climate change**

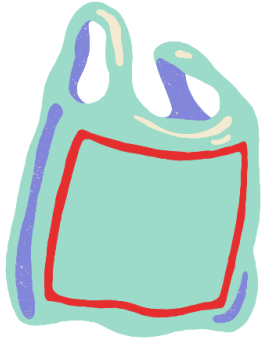




What Carbon Footprint do some different activities have?



**Put these activities in order from smallest to highest carbon footprint:**



All the plastic an average person uses in a year



Buying a 2kg leg of lamb every Sunday in a year



Driving for a year (average 7,600 miles)



The average Brit's annual carbon footprint



Walking for journeys under 1 mile



Powering & heating in the average UK house for a year



# Answers in Carbon Dioxide equivalent (CO<sub>2</sub>e):



Walking for journeys  
under 1 mile = 0 g



All the plastic an  
average person uses  
in a year = 130kg



Buying a 2kg leg of  
lamb every Sunday in  
a year = 2.1 tonnes



Powering & heating in  
the average UK house  
for a year = 2.86 tonnes



Driving for a year (average  
7,600 miles) = 4 tonnes



The average Brit's  
annual carbon footprint  
= 9.5 tonnes

# HOW BIG IS YOUR ENVIRONMENTAL FOOTPRINT?

Our world is in crisis - from climate change to the pollution in our oceans and devastation of our forests. It's up to all of us to fix it. Take your first step with our UK based environmental footprint calculator.

**MEASURE YOUR IMPACT**

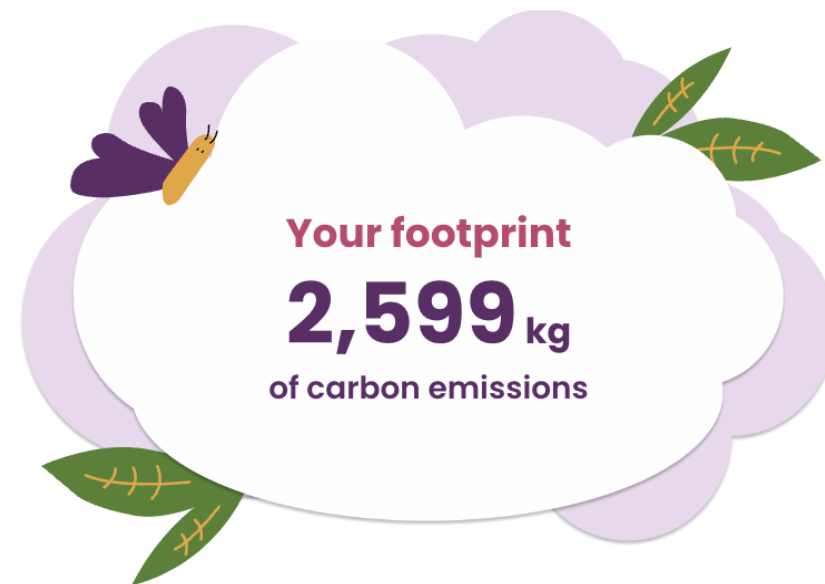
Not from the UK? Our results are measured against UK targets so they won't accurately reflect your region but there's still lots to learn about your impact.



PROGRESS

STEPS

FOOTPRINTS





Grades

×

A+ (best 1%)

A

A- (best 10%)

B+

B

B-

C+

C

C- (above average)

D+ (below average)

D

D-

E+

E

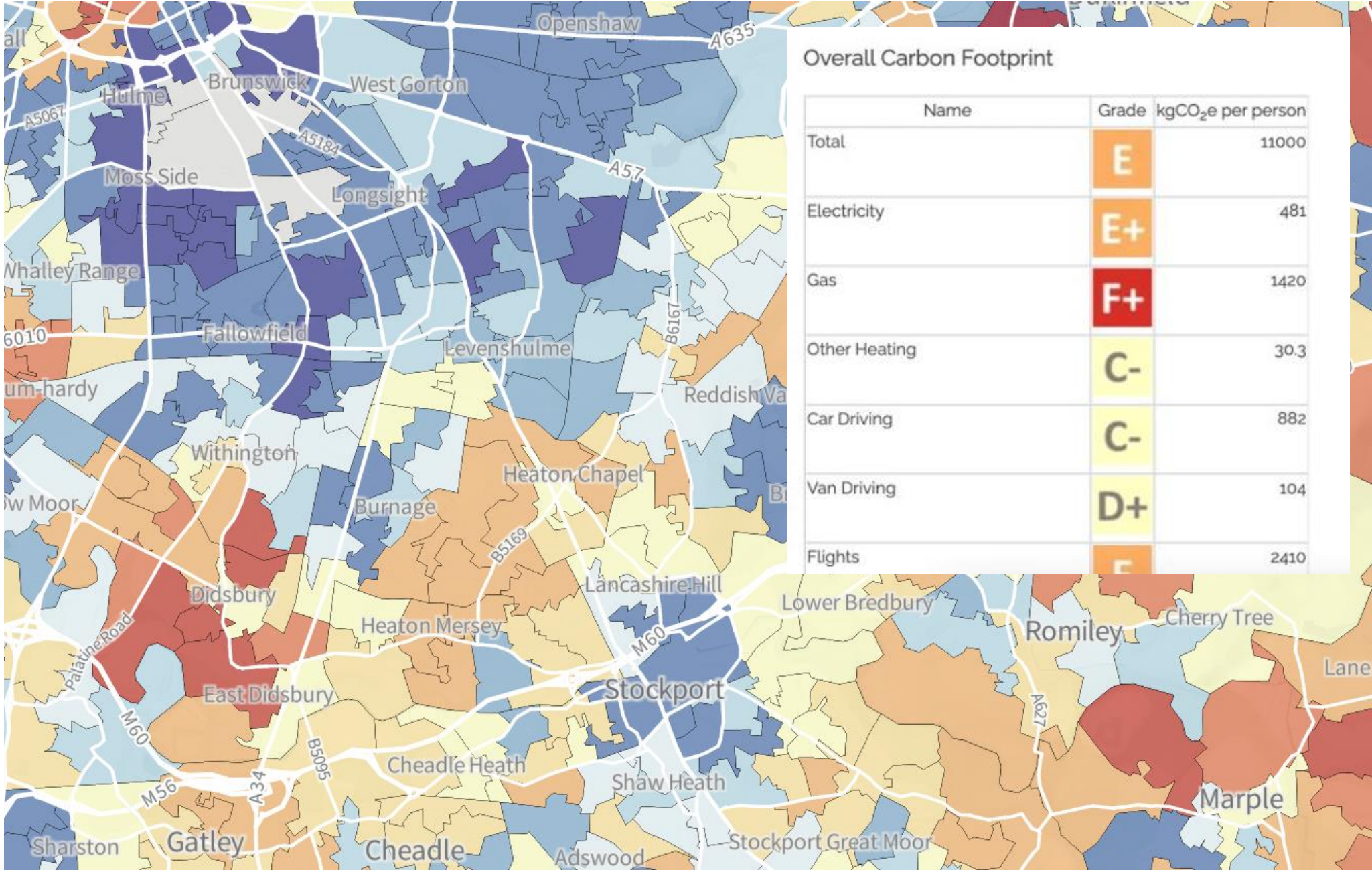
E-

F+ (worst 10%)

F

F- (worst 1%)

No Data

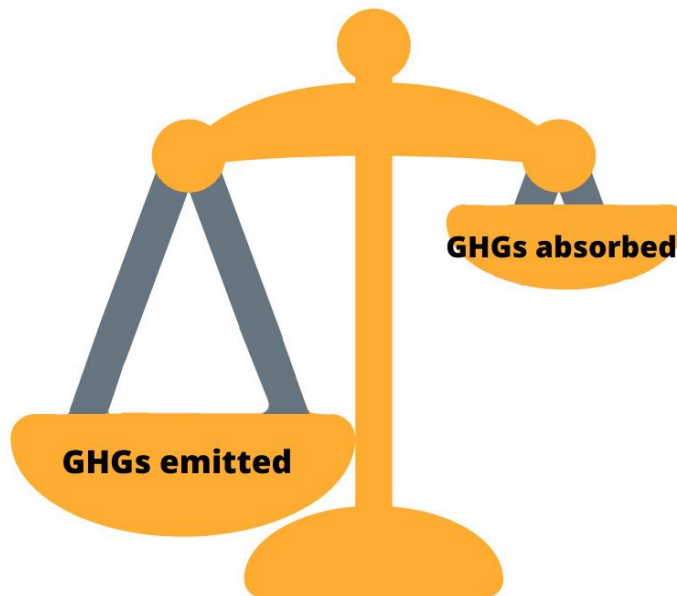
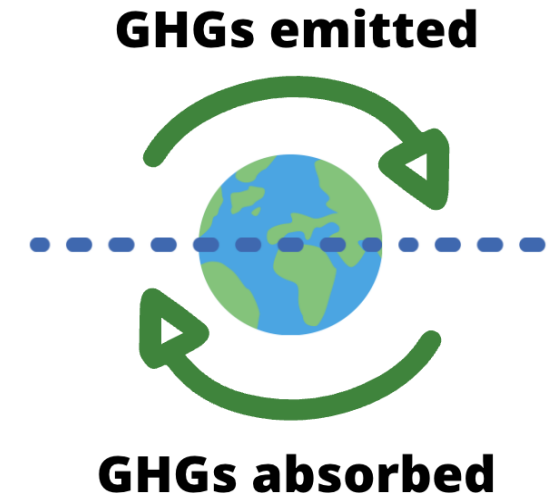


Overall Carbon Footprint

Name	Grade	kgCO <sub>2</sub> e per person
Total	E	11000
Electricity	E+	481
Gas	F+	1420
Other Heating	C-	30.3
Car Driving	C-	882
Van Driving	D+	104
Flights	F	2410

# What does 'Net Zero' mean?

The term net zero means achieving a balance between the greenhouse gases (carbon) emitted into the atmosphere, and the greenhouse gases removed from it.



# How is Net Zero achieved?

1. Define your scope and measure emissions

2. Reduce total emissions to as close to zero as possible

- Reduce emissions from energy, transport, industry, commerce, waste, agriculture & food.
- Unlikely some sectors will reach zero emissions e.g. aviation, agriculture.

3. Offset the small remainder by taking carbon out of the atmosphere (negative emissions)

- By planting trees
- By protecting mature trees and soil
- In the future - *possibly* through carbon capture  
BECCS - BioEnergy with Carbon Capture & Storage



**Something to consider:** This technology doesn't exist yet so we can't rely on this as an option.



# Greenhouse gas emissions in Stockport

**FIGURE 2:**

SCATTER sub-sector inventory for direct and indirect emissions within Stockport 2017

- Residential Buildings (40%)

● Institutional buildings & facilities (13%)

● On-Road Transport (30%)

● Waterborne navigation (<1%)

● Wastewater (1%)

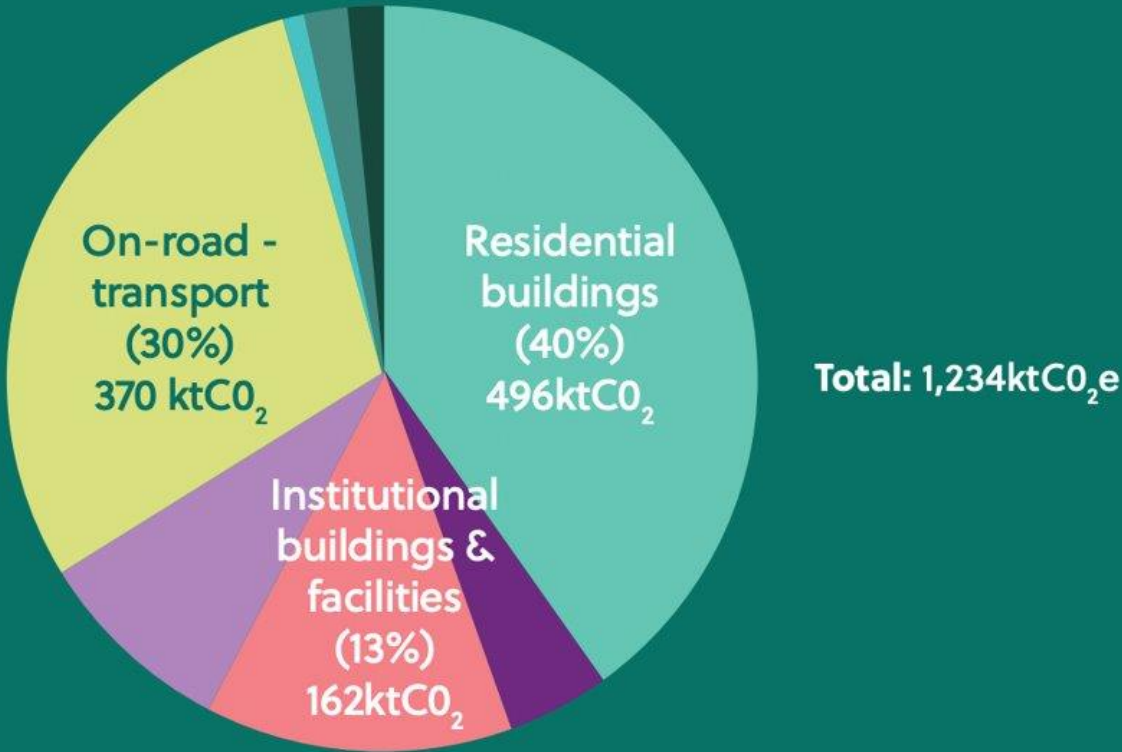
● Industrial product use (<1%)
- Commercial buildings facilities (4%)

● Industrial buildings & facilities (8%)

● Rail (<1%)

● Solid waste disposal (2%)

● Industrial process (<1%)

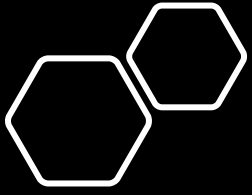


How does this connect to you? Your work?

[www.stockport.gov.uk/climatechange](http://www.stockport.gov.uk/climatechange)  
[stockportcan@stockport.gov.uk](mailto:stockportcan@stockport.gov.uk)



STOCKPORT  
METROPOLITAN BOROUGH COUNCIL



# Understanding Energy To Help Reduce It!

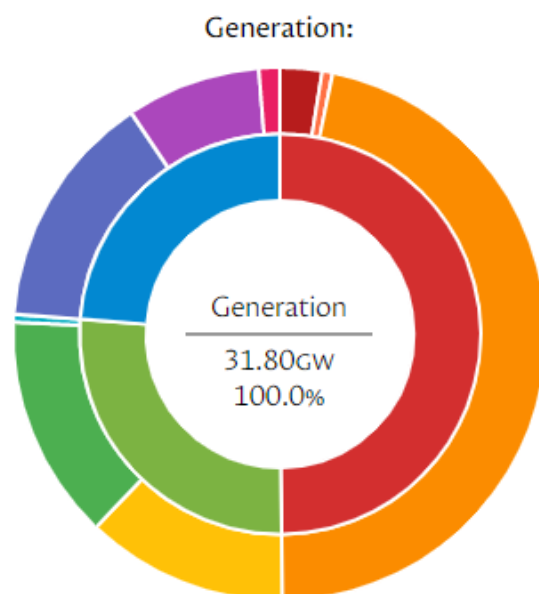
- UK Energy Generation
- Energy Use in the Home
- Reducing Consumption
- Other Options



# National Grid: Live Status (2:50pm 12/07/2022)

The National Grid is Great Britain's electricity transmission network, distributing the electrical power generated in England, Scotland, and Wales, and transferring energy between Great Britain and Ireland, France, the Netherlands, Belgium, and Norway. Most data comes from the [Balancing Mechanism Reporting System](#) and is updated at five minute intervals. Solar data comes from [Sheffield Solar](#) and is updated at half hour intervals.

## 31.8GW demand



Note: this pie chart shows generation only, and excludes interconnectors

## 49.9% fossil fuels

Coal	0.81GW	2.5%
Oil	0.00GW	0.0%
Gas (open cycle) <i>i</i>	0.20GW	0.6%
Gas (combined cycle) <i>i</i>	14.85GW	46.7%

## 23.8% other energy

Pumped storage <i>i</i>	0.00GW	0.0%
Nuclear	4.58GW	14.4%
Biomass	2.59GW	8.1%
Other	0.40GW	1.3%

## 26.3% renewable energy

Solar photovoltaic	3.89GW	12.2%
Wind	4.33GW	13.6%
Hydroelectric	0.15GW	0.5%

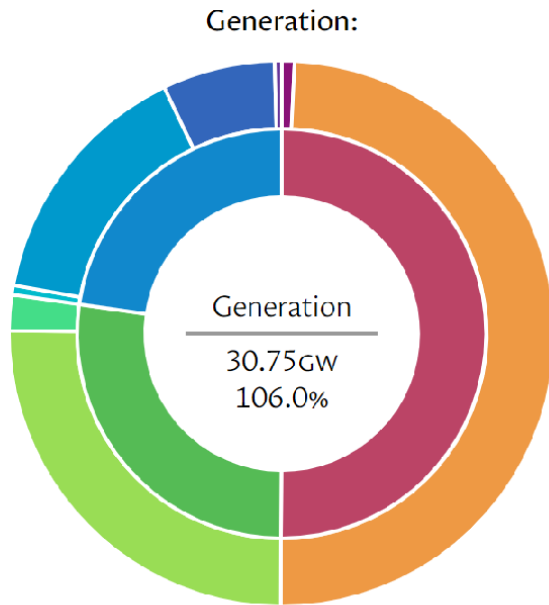
## -0.0% interconnectors

Moyle <i>i</i>	0.00GW	0.0%
IFA <i>i</i>	0.12GW	0.4%
BritNed <i>i</i>	1.02GW	3.2%
EWIC <i>i</i>	-0.28GW	-0.9%
Nemo Link <i>i</i>	0.51GW	1.6%
IFA-2 <i>i</i>	-0.67GW	-2.1%
NSL <i>i</i>	0.32GW	1.0%
ElecLink <i>i</i>	-1.02GW	-3.2%

# National Grid: Live Status (9:35pm 10/10/2022)

The National Grid is Great Britain's electricity transmission network, distributing the electrical power generated in England, Scotland, and Wales, and transferring energy between Great Britain and Ireland, France, the Netherlands, Belgium, and Norway. Most data comes from the [Balancing Mechanism Reporting System](#) and is updated at five minute intervals. Solar data comes from [Sheffield Solar](#) and is updated at half hour intervals.

29.0GW demand



Note: this pie chart shows generation only, and excludes interconnectors

53.1% fossil fuels

Coal	0.23GW	0.8%
Oil	0.00GW	0.0%
Gas (open cycle) ⓘ	0.00GW	0.0%
Gas (combined cycle) ⓘ	15.16GW	52.2%

24.1% other energy

Pumped storage ⓘ	0.17GW	0.6%
Nuclear	4.63GW	16.0%
Biomass	2.05GW	7.1%
Other	0.13GW	0.4%

28.9% renewable energy

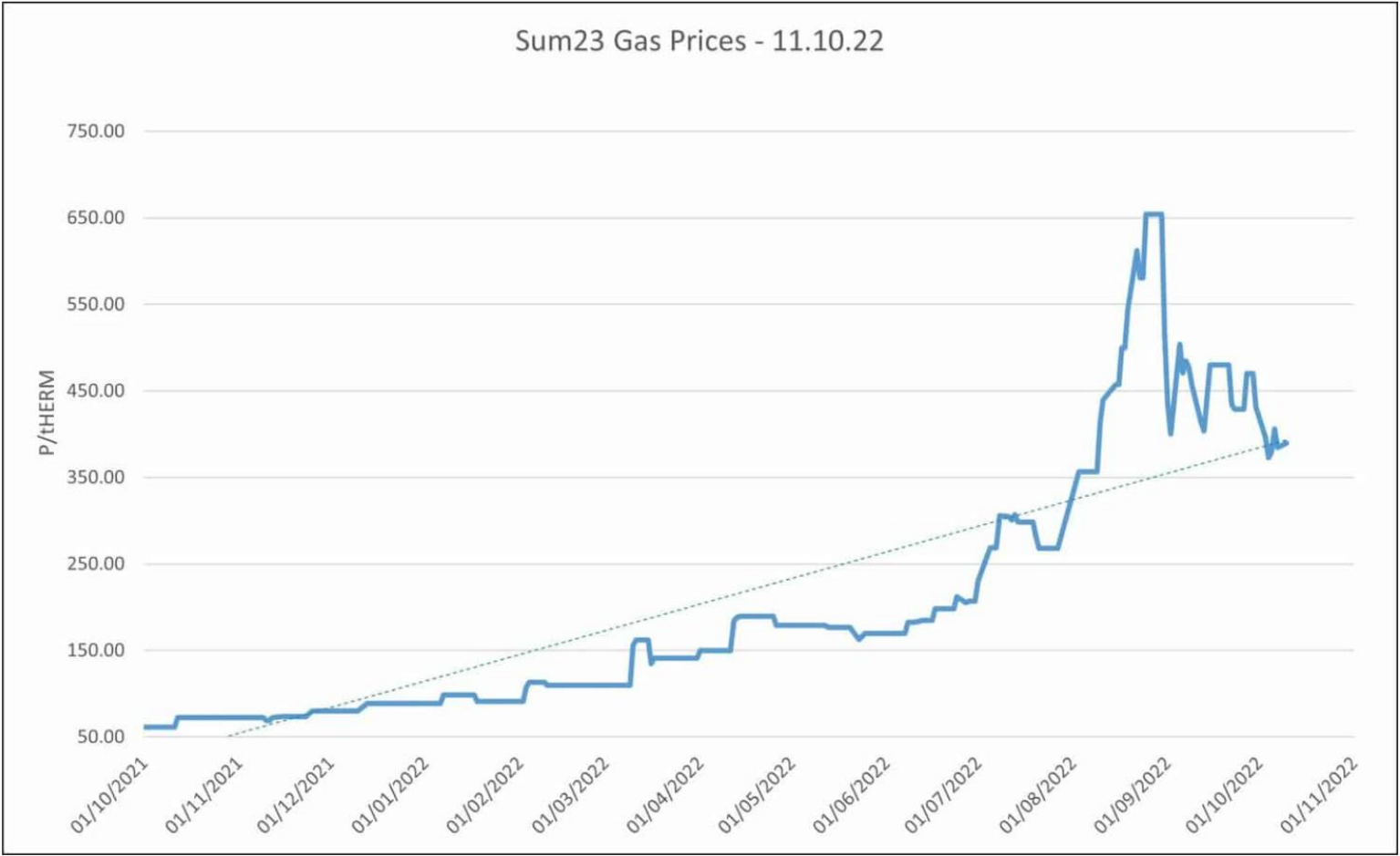
Solar photovoltaic	0.00GW	0.0%
Wind	7.72GW	26.6%
Hydroelectric	0.65GW	2.3%

-6.0% interconnectors

Moyle ⓘ	-0.45GW	-1.6%
IFA ⓘ	0.00GW	0.0%
BritNed ⓘ	-0.50GW	-1.7%
EWIC ⓘ	-0.53GW	-1.8%
Nemo Link ⓘ	-0.31GW	-1.1%
IFA-2 ⓘ	-1.03GW	-3.6%
NSL ⓘ	1.10GW	3.8%
ElecLink ⓘ	0.00GW	0.0%

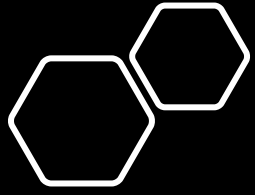


# This Chart Shows The Price Of Gas On The Wholesale Market In GB For Delivery Period - Summer 2023



**Last Updated 10.10.22**

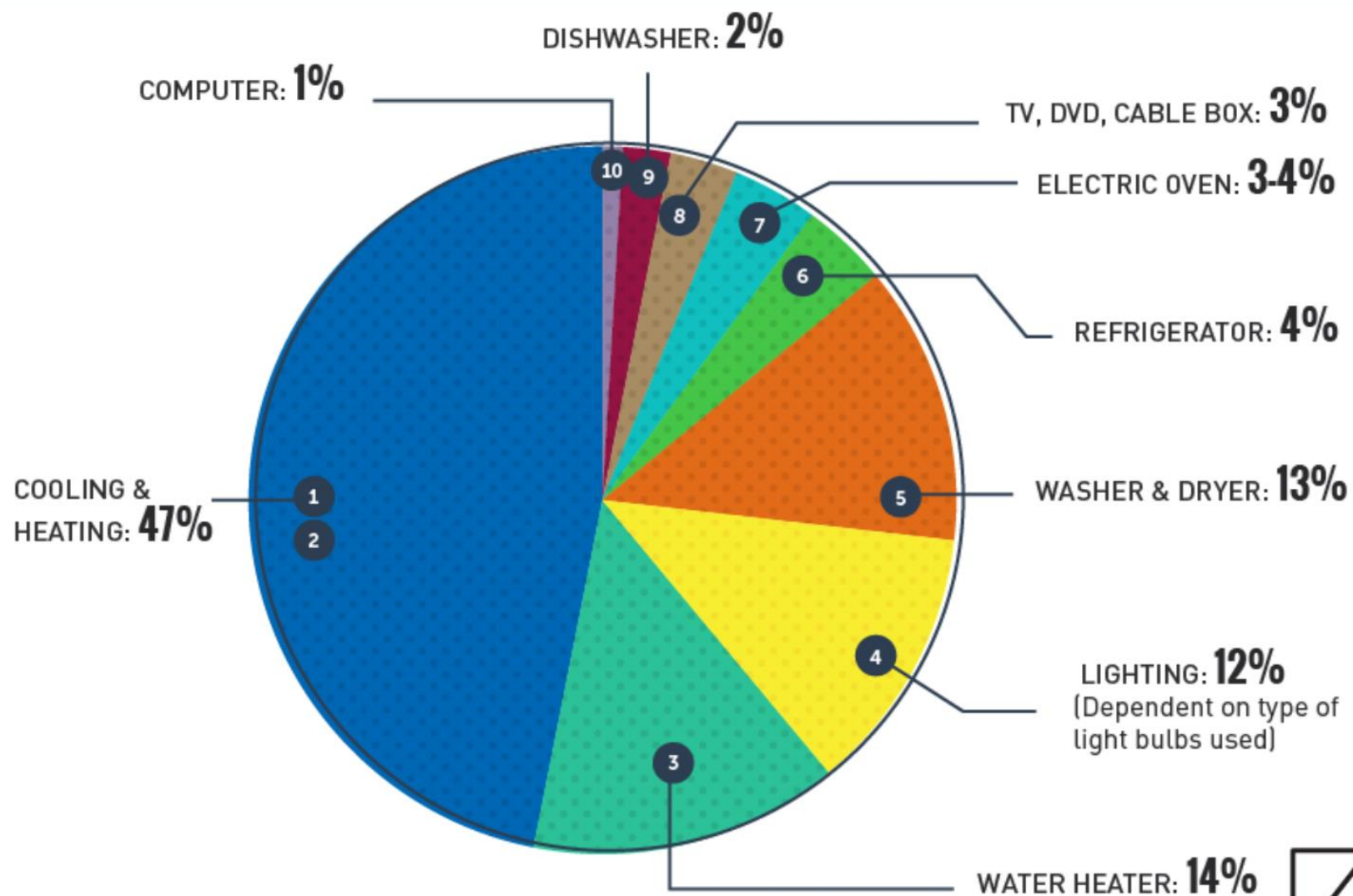
Wholesale gas can be purchased on a season ahead basis and this chart shows how prices have performed over a period of time. These prices are more closely aligned with key market drivers and are influenced by current events such as geopolitical tension or weather fronts.



# Energy Usage in the Home



## TOP TEN ENERGY USERS IN YOUR HOME:



# HOW MUCH ENERGY DO OUR APPLIANCES

## USE?



All you need to know about everything that matters.

News

Politics

Ukraine

Business

Arts & Life

Podcasts

## THE WEEK

# Air fryers flying off shelves

Brits are snapping up blankets and air fryers in a bid to keep their energy bills down this winter, said the British Retail Consortium. Air dryers and winter clothing have also been selling well. Meanwhile, pubs “are hoping to convince people to work in their local boozers”, reported The Times. Across the country, 185 Young’s pubs and 380 Fuller’s pubs are offering “working from pub” packages. Some pubs are offering all-day packages that cost £10, said the Daily Star.

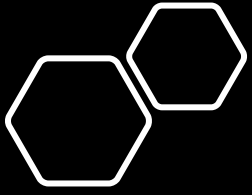
[HOW TO CUT YOUR ENERGY BILLS THIS WINTER →](#)



Appliance	Power usage	Typical usage	Estimated annual running costs
LCD TV	0.21kWh per hour	6 hours a day (power on)	£130
Fridge Freezer (A spec)	408kWh per year	24 hours a day	£115
Tumble Dryer	2.50kWh per cycle	148 uses a year	£105
Electric hob	0.71kWh per use	424 uses a year	£85
Electric oven	1.56kWh per use	135 uses per year	£60
Dishwasher	1.44kWh per use (at 65oC)	135 uses per year	£55
Kettle	0.11 kWh per use based on heating 1 litre of water	1,542 uses per year	£48

LED lighting saves approx. 50% compared with existing bulbs.

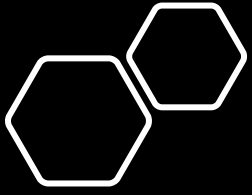
Standby devices generally use around £2 per year, the exceptions are active standby devices ie TV's, laptops, routers and AI devices, which could add £47 / year to your bill.



# Heating Your Space & Hot Water - 60%

- Insulate - (Loft -£500 saves £300)
- Draughts – Doors & Windows (2 year)
- Thermostat – 19 ° ?
- Other Options





# Renewable Technologies

- Heat Pumps
- Solar Panels
- Battery Storage



# The Heat Pump Debate

## Air Source Heat Pumps

Install up to £10,000

Government Grant £5,000

Gas v Electricity Calculation

Plumbing ?

Instant Hot Water ?

Proper Use - Education

# R O I for Solar PV & Battery

## Solar Photovoltaic & Battery

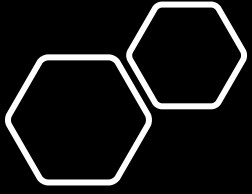
Domestic install typically £5k-6k

12 panels generation 3.6kW

Average R O I is 5 Years

Battery depends on usage profile

Commercial Properties - scale



Thank you !

[www.kast-energy.co.uk](http://www.kast-energy.co.uk)



 **KAST**





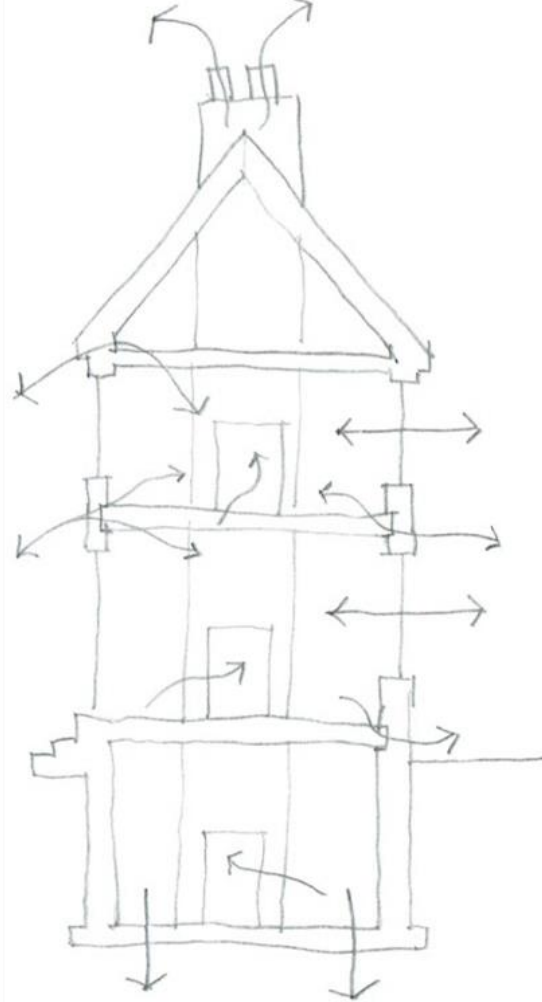
# Understand your home - reduce your carbon!

Mel Godfrey - 13 October 2022

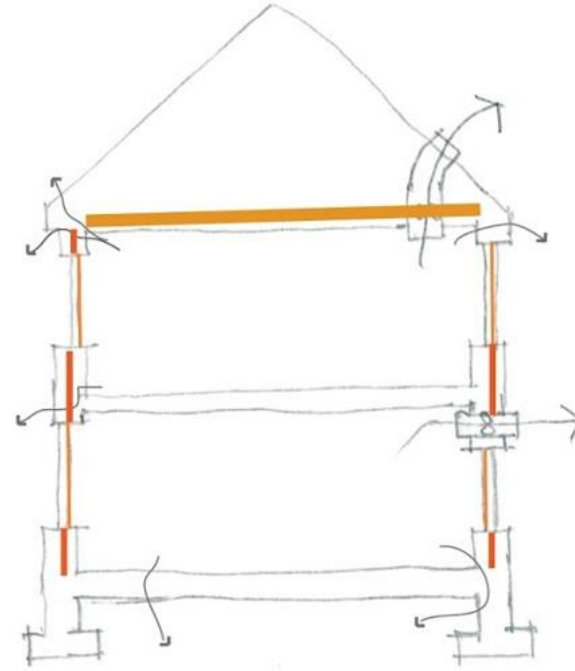
# The Basics

What kind of house  
do you live in?

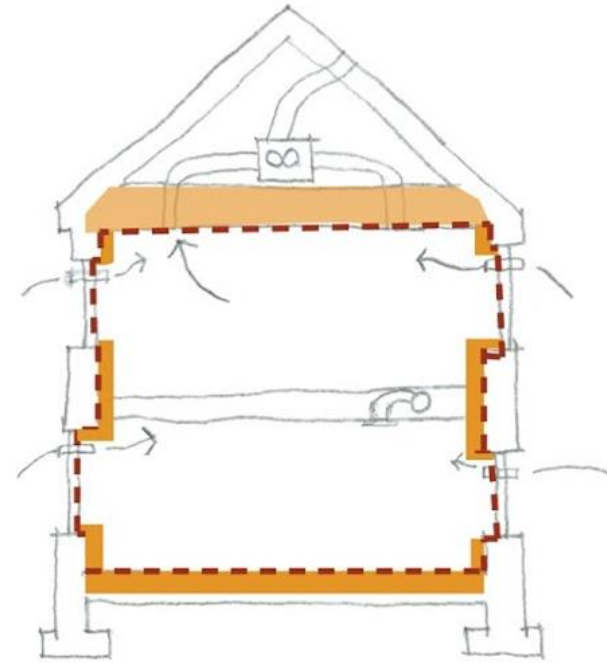
How does your  
behaviour impact  
the comfort levels  
that you seek?



**Older houses ( < 1980)**  
Cold, draughty, heat  
loss through solid  
walls, cold basements



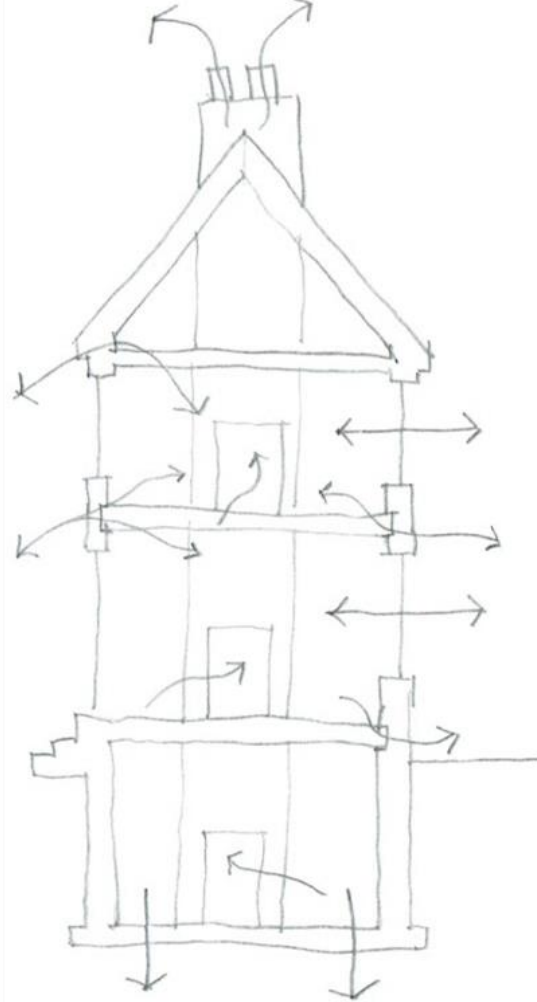
**Modern House (>1980s)**  
Insulated walls and roof- not  
continuous  
Some mechanical ventilation  
and trickle vents often turned  
off or blocked  
Not airtight



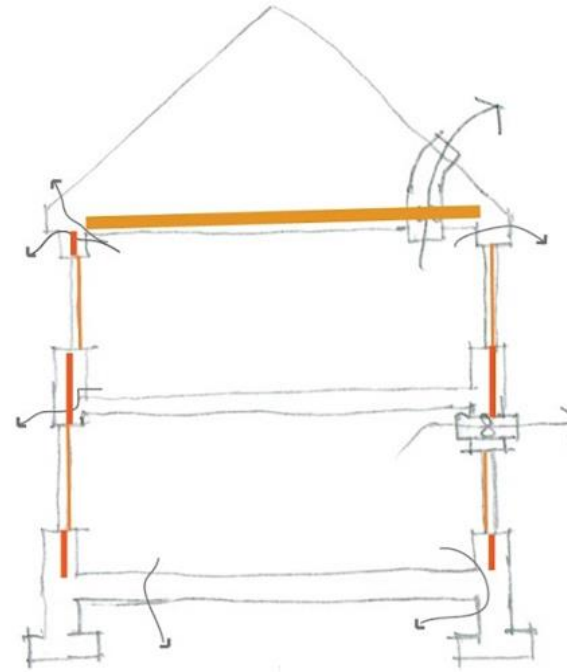
**Super insulated House:**  
Continuous thick  
insulation  
Intelligent mechanical  
ventilation  
Significant Airtightness  
detail throughout

# AIR TIGHTNESS

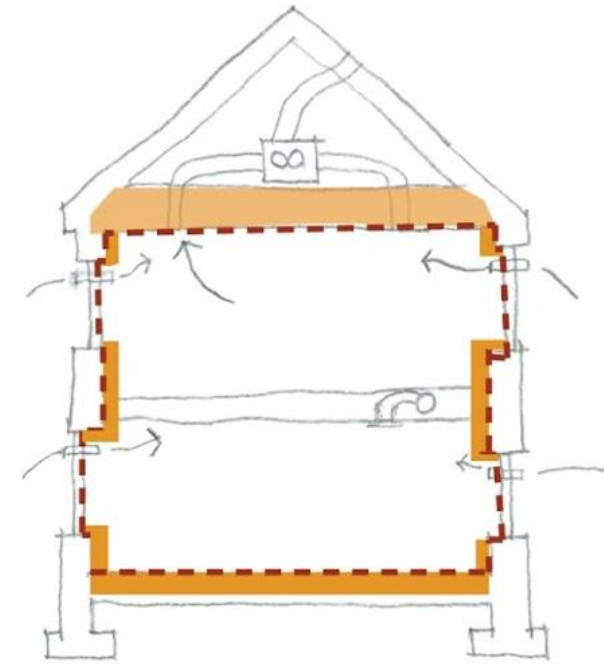
When making improvements to your home by adding insulation and improving air tightness **you will alter** the heating/ventilation balance.



**Older houses ( < 1980 )**  
Equivalent to wearing  
a fleece in a gale



**Modern House (>1980s)**  
Equivalent to wearing a  
fleece with an outer shell  
layer in a gale



**Super insulated House:**  
Equivalent to wearing a  
diver's dry suit with  
underwater breathing  
tank

# If you wish to reduce your carbon and reduce your energy bills, then...

- Your home needs (more) insulation
- Insulation is worthless unless there is airtightness
- Airtightness requires measures to circulate air and remove moisture
- Insulating older homes ( called retrofitting) properly requires real attention to detail in design and installation
- Cutting out draughts is not airtightness (but is a good start)
- Try to understand your home/your behavior via a hygrometer



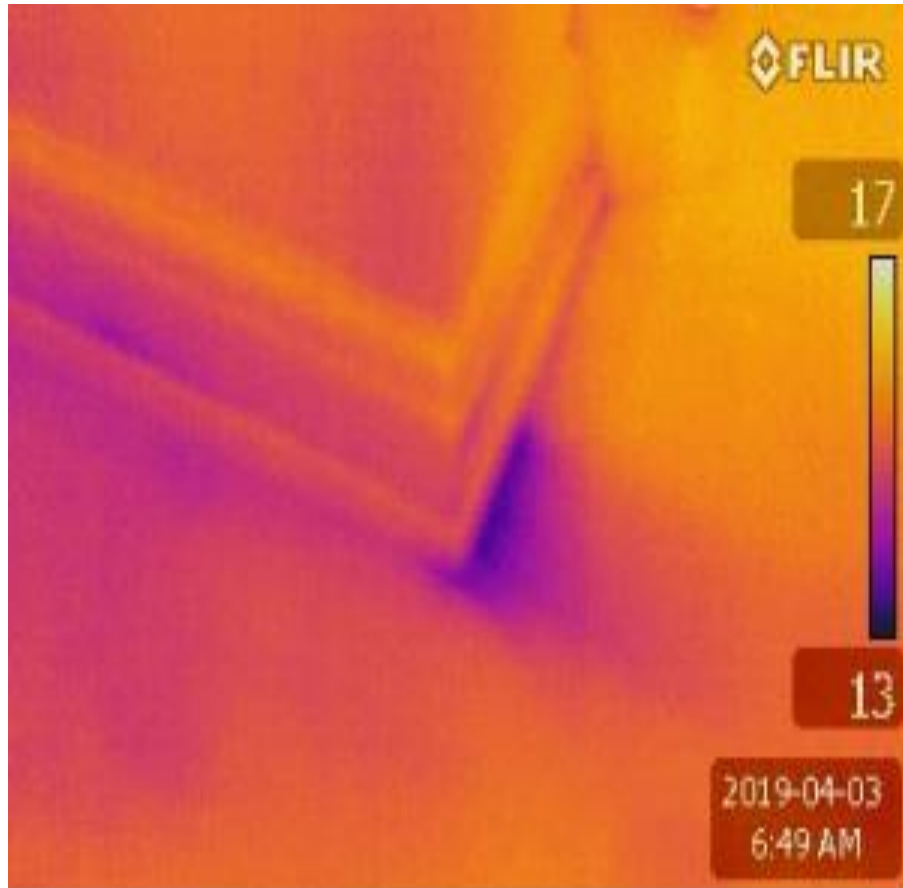


# MY MESSAGE?

- Your home is a system
- To be truly energy efficient (and low carbon) you need to understand in detail how it works
- Insulation/Ventilation/Airtightness is complex
- If you wish to make a step change then you will need expert advice



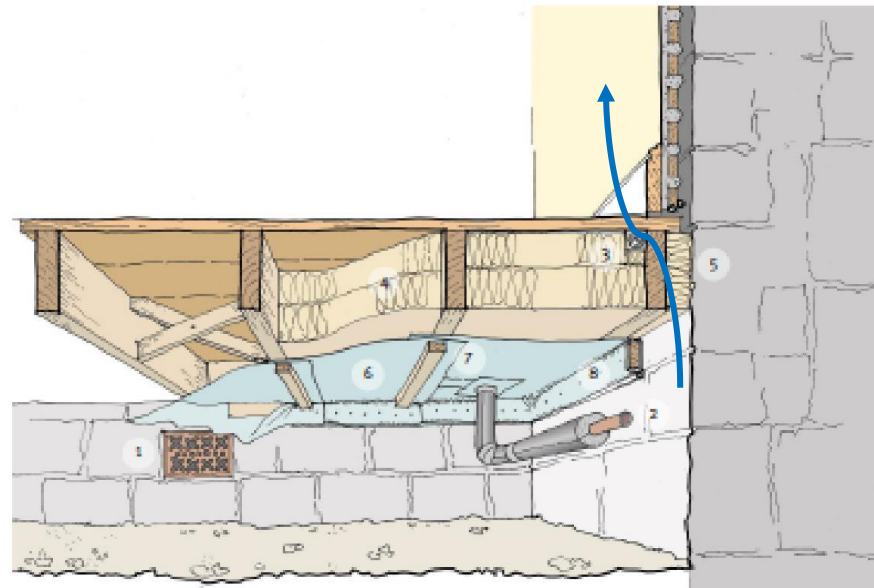
# Air Leakage from behind skirting board



# That Skirting Board

## Opportunities:

- Add Insulation to a timber suspended floor
- Airtightness to safeguard end of joists
- Insulate and seal gaps at edges
- Use a breather membrane to hold the insulation in place



# THAT SKIRTING BOARD...

## As an example

- Can be done by a competent DIY person ( and save £'s....80%)
- If you engage a contractor don't expect them to understand airtightness vis insulation
- Know the specification/ method before starting



# THAT SKIRTING BOARD...

- Is an example only
- There are many similar other construction/ fabric/ services examples I could have use....beware!





# AIRTIGHTNESS and VENTILATION

When making most repairs or improvements to your home you have an opportunity to add insulation and improve air tightness ... if you think ahead



# QUESTION!

## Kitchen OR Bathroom Refurb? New Windows?

- Did you consider the draughts that are getting in
- How moisture will escape?
- Interstitial condensation?



# Moisture v Temperature



We live near The Atlantic.

A thermometer/hygrometer will aid your understanding of your home and how you interact with it.

Important to maximising efficiency of the settings on your central heating, radiator thermostats, use of trickle vents and mechanical extractors etc.

If you add insulation and improve air tightness you will alter the heating/ventilation balance = understand the physics.

# Thinking of planning a whole house retrofit?

1. **Maintenance:** before starting it's essential that your property is free of leaks and damp, before any thermal upgrading is started.
2. **Consider moisture:** the passage of moisture through the home should be surveyed and known. Note areas where there are high moisture levels and make plans to remedy.
3. **Ventilation:** adequate ventilation is crucial! Older properties have a fair degree of “natural” ventilation. When adding insulation consider if specific ventilation measures are required to maintain humidity at an acceptable level.



# Thinking of planning a whole house retrofit 2

4. **Materials:** working in older buildings, consider breathable materials where possible.
5. **Have a Plan** before you spend
6. **Sequencing the work:** If you are going to stage the works over a number of years, consult with a professional on the sequencing of the thermal measures (or you might have to undo some work later)
7. **Supervision** of the work by an independent person is strongly recommended to make sure the quality of workmanship is good and thermal performance is not compromised





# My Top Tips

- Understand the complex challenges that your home is presenting you with ( = know what you don't know or use professionals who do!)
- Make your design and financial decisions from a position of strength (via paid for advice or your own research)
- You will know the quality of products you want to put into your project - make sure this applies to your designers and contractors too.
- Think about your budget from the start and tailor your expectations. Be in it for the long haul
- Projects are time consuming - think it through to prevent avoidable delays ( or pay for advice to guide you through)



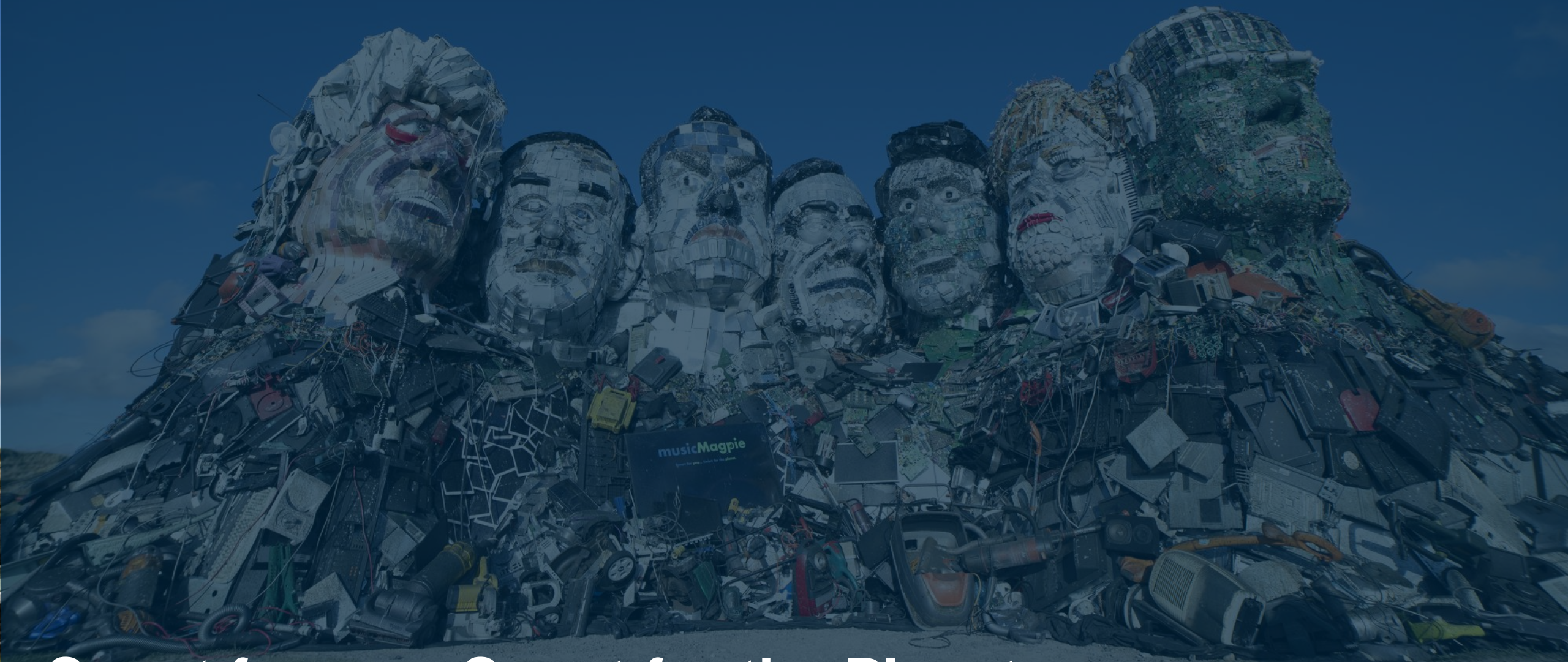
**Mel Godfrey**

**[mel@melgodfrey.co.uk](mailto:mel@melgodfrey.co.uk)**



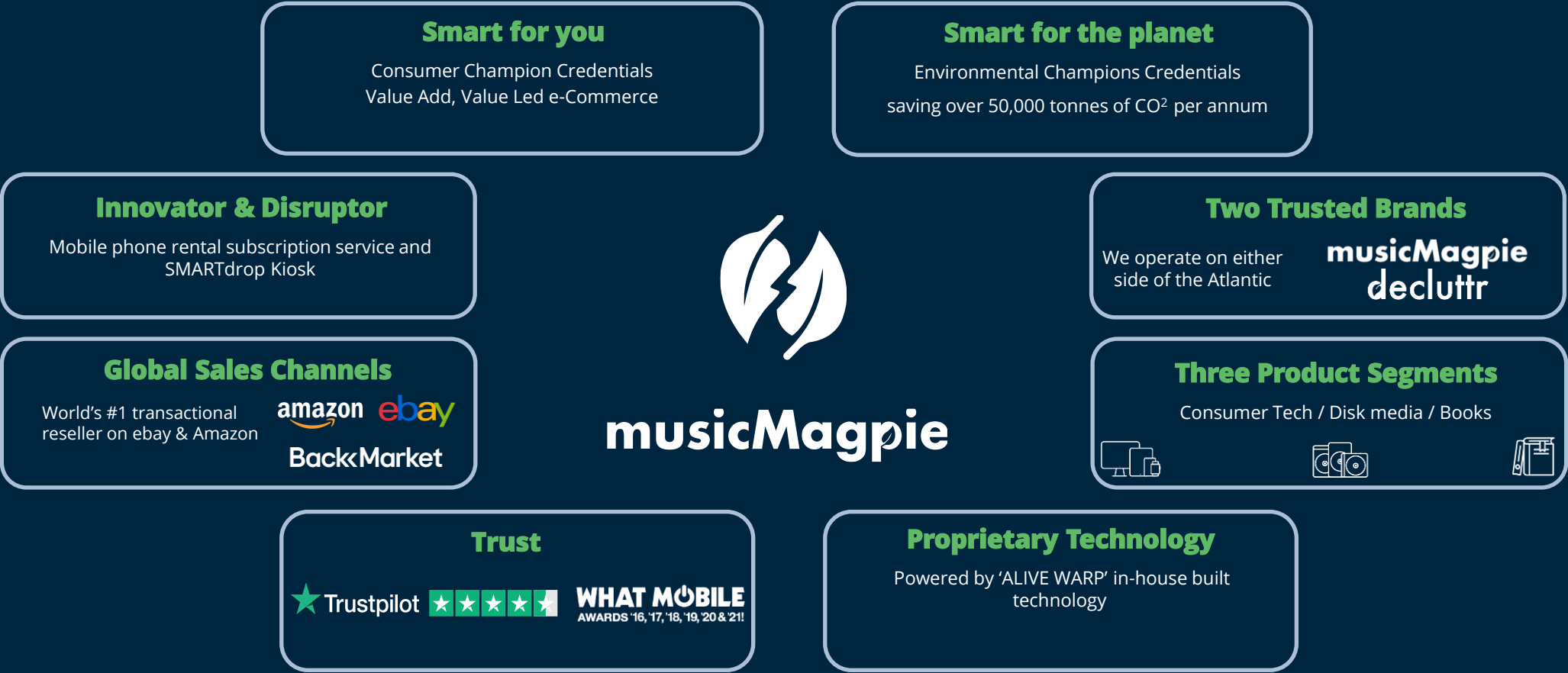


musicMagpie



Smart for you, Smart for the Planet

# musicMagpie is a leader in the circular economy of consumer technology, disc media and books in the UK and US



## The smart, sustainable and trusted way to Buy, Rent and Sell



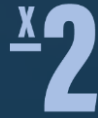


# E-waste: the problem

E-waste is discarded electronic products with a battery or plug, such as mobile phones, tablets or computers



The UN estimates that **over 53 million tonnes of e-waste are generated globally every year**, based on 2019's figures



It expects this **figure to double by 2050**, making it the **fastest-growing domestic waste stream in the world**



**E-waste which isn't recycled can pose many environmental issues, especially if it ends up in landfill** leaking harmful chemicals into the soil, or releasing fumes if incinerated

**In 2019, only 17.4% of e-waste was documented as formally collected & recycled**



**Failing to recycle e-waste means precious materials contained in tech products can't be reused** including gold, silver and platinum



**Building a new smartphone accounts for approximately 85% to 95% of the device's total CO2 emissions** for two years



**2.8 million tonnes of CO2 emission could be saved** if all our old small electricals that are being thrown away or hoarded were recycled



# What should happen to e-waste

**Reduce**

**Repair**

**Reuse**

**Recycle**

# Reduce

## Being conscious consumers

- Invest in technology that is built to last
- Consider skipping the upgrade or latest gadget
- Library of things

# Repair

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- Take care of your technology
- Right to repair
- Repair cafes/sheds



# Reuse

If your electrical items are still working and in a reusable condition you can donate it to a reuse organisation or some charities.

You could also raise cash by selling your unwanted tech items. We buy such as tablets, computer consoles, mobile phones, smartwatches.

Electrical items depreciate in value very quickly, so you benefit by reusing or selling quickly.

We refurbish consumer technology items and restore disc media to 'like new' standard to add value and resell approx. 95% of the products we receive



# MONEY LOST OVERTIME TO DEPRECIATION

**61%** of people do not trade in their device at the same time as upgrading, waiting an average of sixteen months to do so. During this time, their device will lose **50%** of its value.

A third (33%) of phone owners in the UK don't trade in their old phones at all, which means they could be sitting at home losing value and have the potential to contribute to the e-waste piling up in landfills across the globe. These numbers increase in older generations, with 42% of phone owners aged 45 and over not trading in their old phones at all



# Our Circular Economy Proposition

The circular economy has an important role to play in the transition to a sustainable economy



# Benefits of Reuse

During 2021, our UK media and tech customers along with our trade partners have helped to save over 50,000 tonnes of CO<sup>2</sup> by selling to us and buying from us



Heating 18,226  
Homes for a year

OR



30,006 flights  
From LHR to JKF

# Recycle



# Recycle

What happens at Bredbury Parkway, Adswood or Rose Hill Recycling Centre

Electrical items can be recycled at a Recycling Centre. Do not put electrical items in any of your bins at home.

If you think the equipment could still be useful to someone else, then donate it to a charity shop, or to the Renew hubs at some recycling centres.

<https://www.recycleyourelectricals.org.uk/>



Please remove  
all personal data  
from your  
electronic devices



# Q&A

## Low Carbon Heatons Events

*Small steps for a big change*

